Space Weather Forecast

Issued on Tuesday, 07 June 2022 at 13:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of a glancing blow from a Coronal Mass Ejection overnight into 08 June, but low confidence. Otherwise, no significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been very low over the past 24 hours, with X-ray activity comfortably below common class, with no flares observed. There are now just two sunspot regions on the sun, with both stable, unproductive in terms of flares, and magnetically unipolar. Potentially adding to these numbered regions, a third spot group developed in the southwest, becoming magnetically bipolar, but again, with no flares produced.

A minor 'coronal dimming' (a possible Coronal Mass Ejection (CME) signature) was observed in the northeastern quadrant around 06/1300UTC, however any resultant CME is not apparent on following satellite imagery, and none were observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind is currently in a slow regime, despite the arrival of a weak CME yesterday (06 June), possibly that from filament eruption(s) on 01 and 02 June (arcs of plasma leaving the sun as CMEs). The solar wind speed has been at background levels, between 300-340km/s, during the past 24 hours. The magnetic fleld was moderate to weak, with the all important north-south component was also moderate to weak, following the waning effects of the CME. The net effect of the above solar wind measures was predominately Quiet geomagnetic activity, with Unsettled (Kp3) intervals, following the arrival of the CME on the 06 June.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be very low initially. Returning sunspot regions may increase the risk of flares from midweek UTC, although the degree to which this occurs is uncertain pending arrivals over the eastern limb.

Solar Wind / Geomagnetic Activity: The effects of the CME which arrived on 06 June continue to wane during day 1 (07 June), with a slow solar wind regime. There is a Slight Chance of Unsettled (Kp3) or Active (Kp4) intervals, with a very low risk of G1/Storm, being attained if the slow wind is again interrupted later on day 1 (Tuesday 07 June and into Wednesday 08 June) by a possible glancing blow from another CME, which left the northeast quadrant on 04 June. Low confidence.

Quiet conditions should otherwise again predominate after any CME interjection, ahead of a possible minor fast wind arriving at the very end of the forecast period (from a small coronal hole). Even after this fast wind onset, G1 is unlikely to occur.

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Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	2	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	1	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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